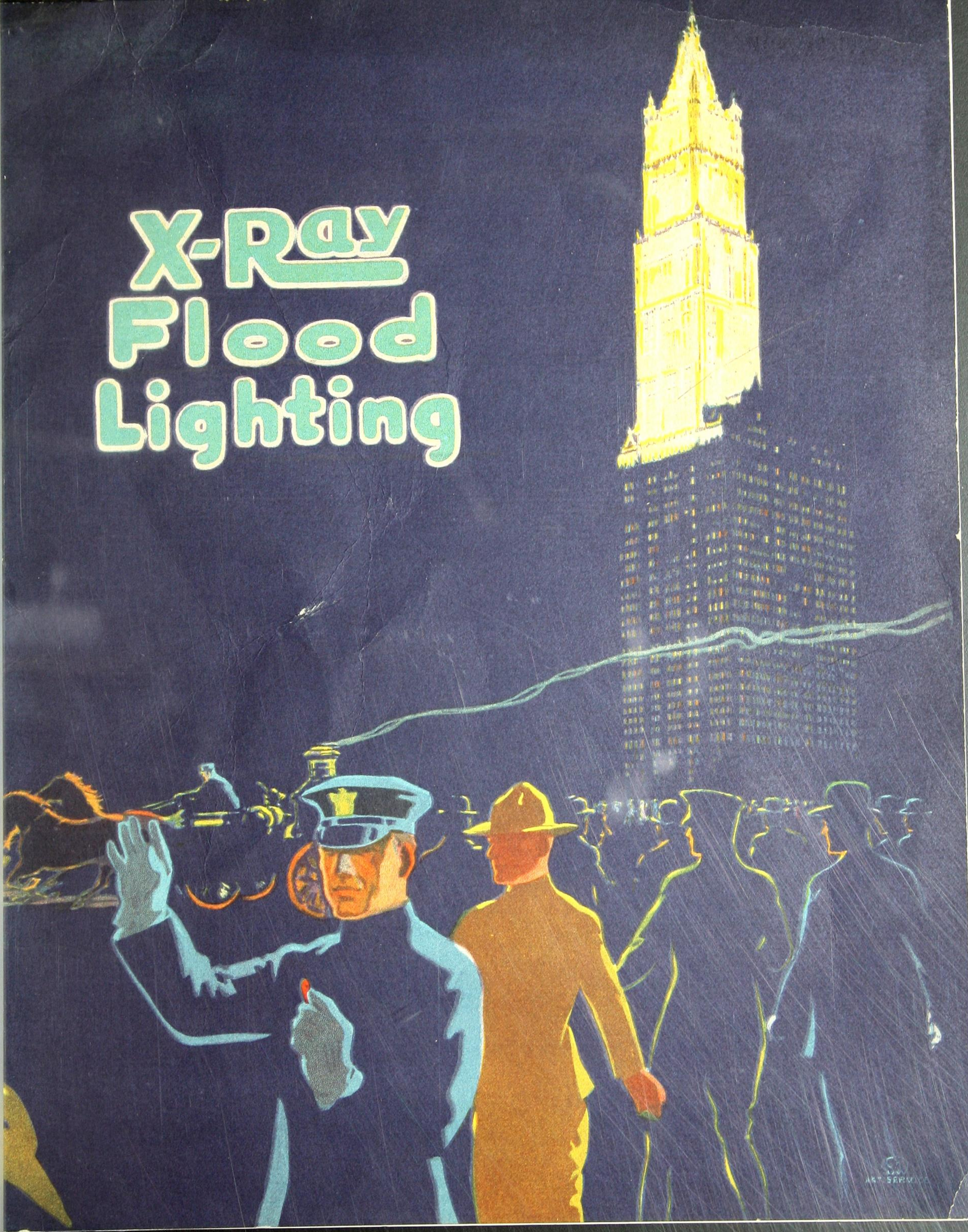
X-Ray Flood Lighting



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1918

X-Ray Flood Lighting

Projectors and Reflectors

The flood lighting projectors described in this booklet are manufactured under the direction of the same engineers who originated and perfected X-Ray Indirect Lighting, the genuine indirect illumination, with all light sources entirely concealed, and by the same company who manufactures the famous X-Ray Show Window Reflectors, used in modern stores throughout the world.

X-Ray Lighting
from Concealed Sources

NATIONAL X-RAY REFLECTOR CO.

31 WEST FORTY-SIXTH STREET
NEW YORK

235 WEST JACKSON BOULEVARD
CHICAGO

Copyright 1918

Serial No. 119

Inception of Flood Lighting

Flood lighting owes its success to the spectacular achievements which marked its use in lighting buildings, signs, etc.

The first notable and permanent installation of flood lighting was made with X-Ray Reflectors. The National X-Ray Reflector Company having successfully engineered many lighting problems, always working along the lines of concealing light sources, found in the Woolworth Building tower, particularly well adapted conditions for producing a new and startling spectacular effect.

Instantaneous success met this introduction of a new form of illumination and many buildings, large and small, throughout the land, were brought into startling prominence by the use of our equipment.

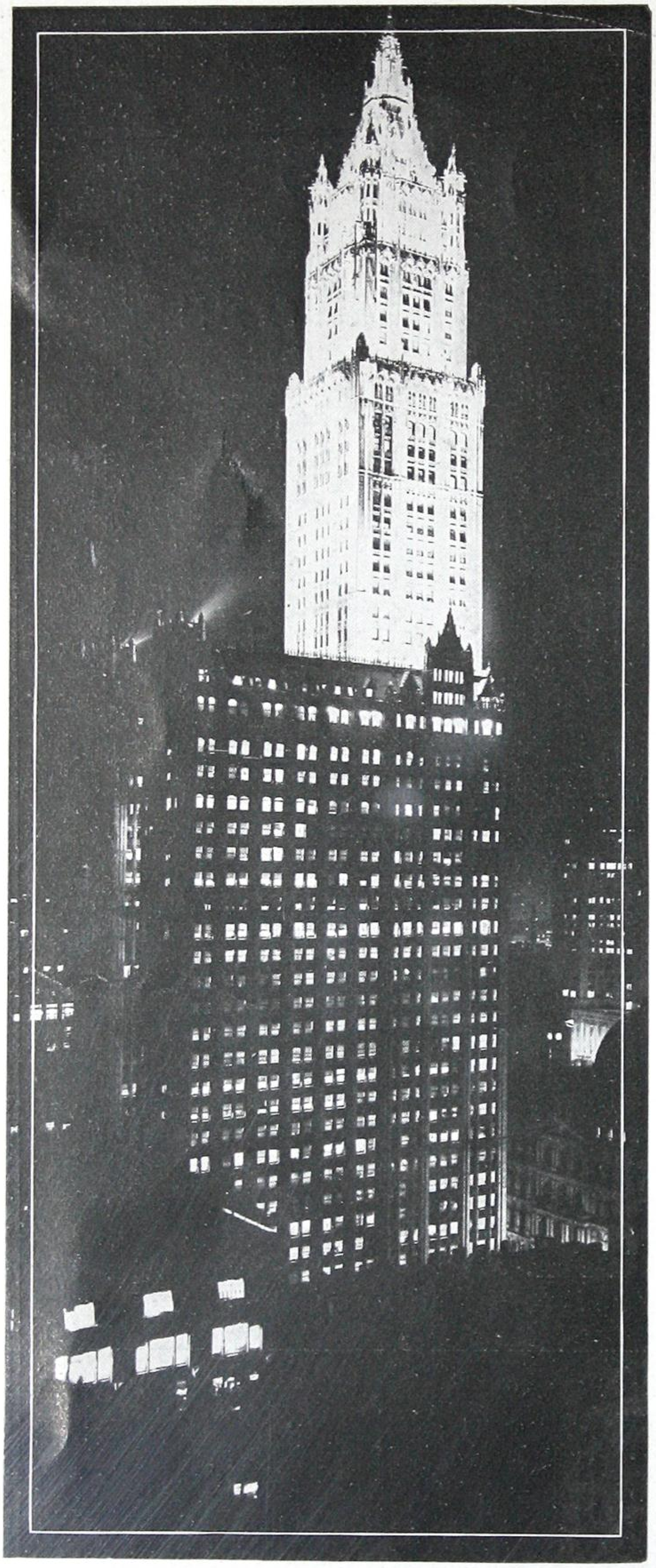
War Conditions

War conditions changed flood lighting from advertising uses to utility purposes, i. e., protective lighting and speeding up night production. Experience and equipment enabled us to be of great service in this necessary field. The United States Government and private concerns are using thousands of the flood lights described herein.

Reflectors

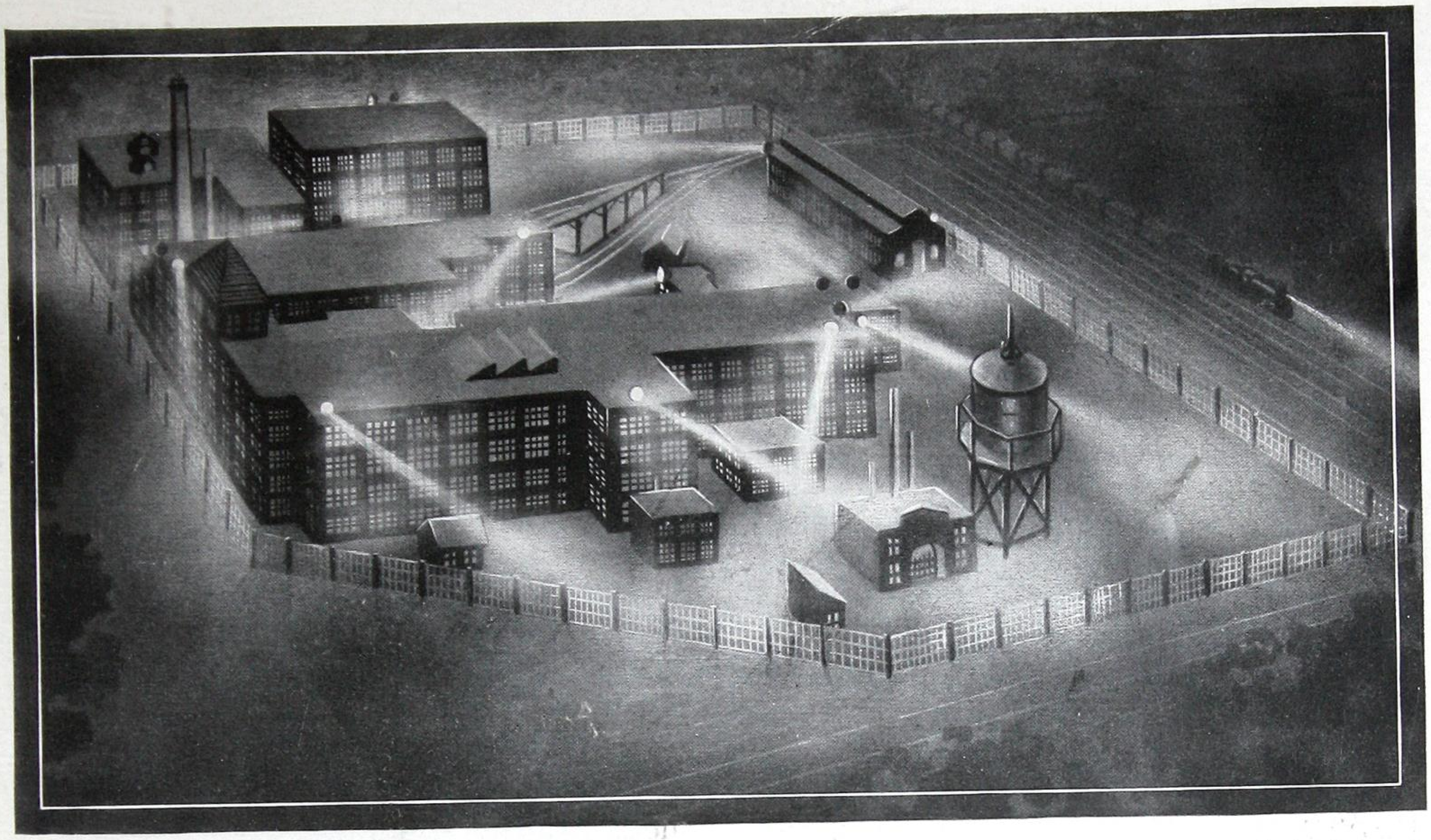
The value of flood lights depends on the efficiency and lasting qualities of the reflector. Here the well known X-Ray Reflectors demonstrate their great value and superiority. The most complete line of reflectors covering the entire field are shown and described on pages six, seven and eight.

These X-Ray Reflectors are everlastingly brilliant — silver plated on perfect crystal glass — protected by backing of a special process, *the famous X-Ray way* — will not tarnish, peel, crack or blister — polishing unnecessary.



An untouched photograph of the Woolworth Building, New York City, by night, 550 X-Ray Projectors used.

Mr. E. A. Cochrane, Superintendent of the Woolworth Building, has this to say: "I am very much pleased to state that these reflectors have proven a success, quite beyond our expectations. The quality of light is remarkably beautiful for our purposes, and the reflectors were designed with such great care that they make possible perfect focusing."



This drawing gives a bird's-eye view of an average manufacturing plant flood lighted at night. Comparatively few projectors are used but the entire grounds are thoroughly safeguarded with light.

Protection Lighting

War conditions, with the enemy not 3,000 miles away, but here, within our gates, has proven the necessity of surrounding manufacturing plants with protecting daylight 24 hours a day.

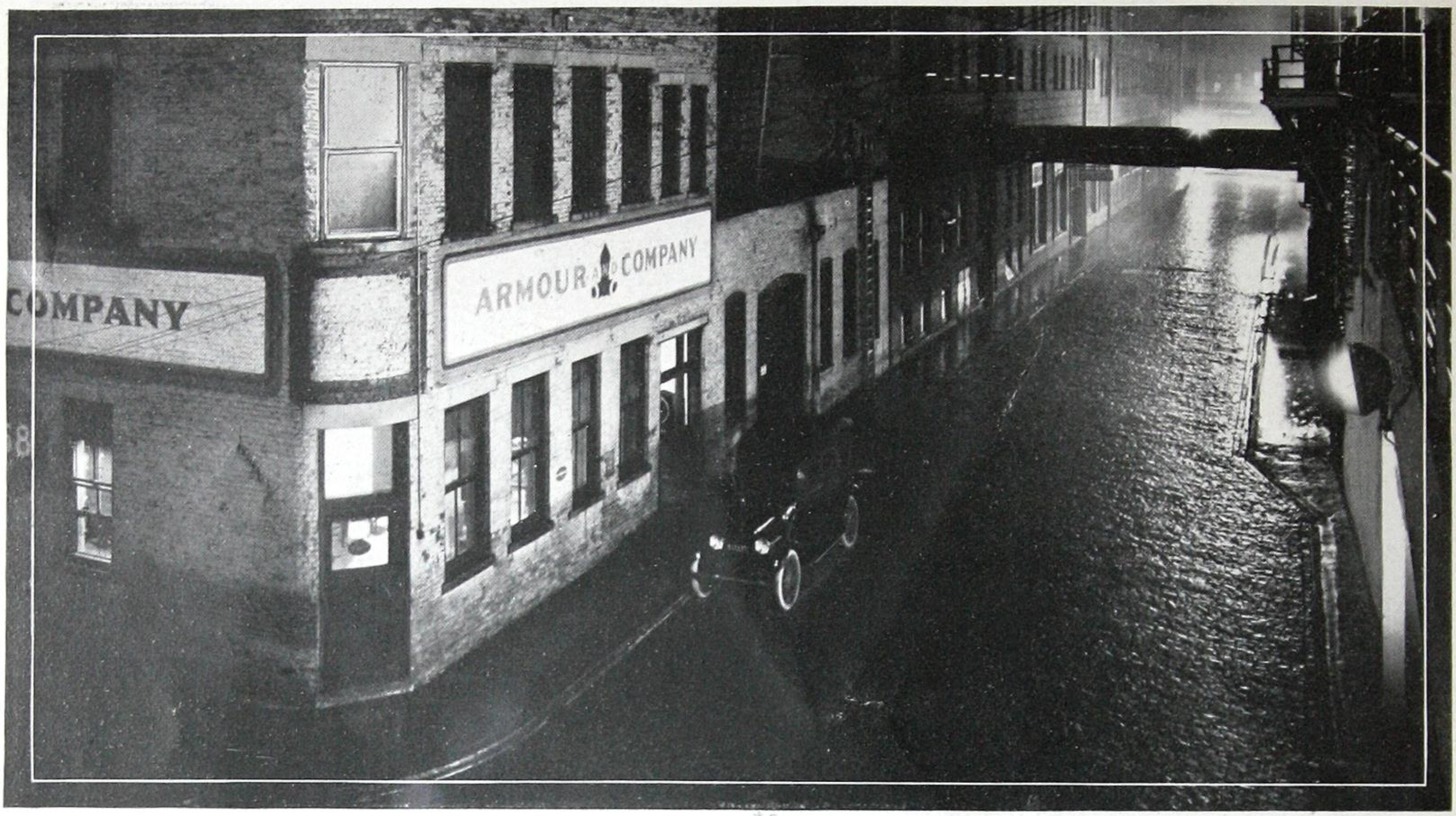
$43,538,000 worth of property classified as "war industry" was destroyed during the first nine months we were in the war.

Such stupendous loss is incontrovertible evidence of the necessity of protection—and the best protection is that which *prevents* the damage.

Fire fiends take advantage of darkness. By the light of one of the biggest explosions in America, the watchmen saw the enemy running away—but *that* was too late. The proper light *before* the explosion would have enabled the watchmen to catch him before the damage was done!

Galveston Mills

X-Ray Projectors brilliantly flood any building with light—make it impossible for the marauders to sneak in at night—and prove the cheapest insurance you can buy. Insurance Companies pay for your immediate loss, but they cannot pay for the delay in reconstructing your plant, and the loss of munitions, food or supplies for our soldiers. X-Ray Flood lighting may save you millions of dollars, prevent delay in production for months—and even save the lives of your employees!



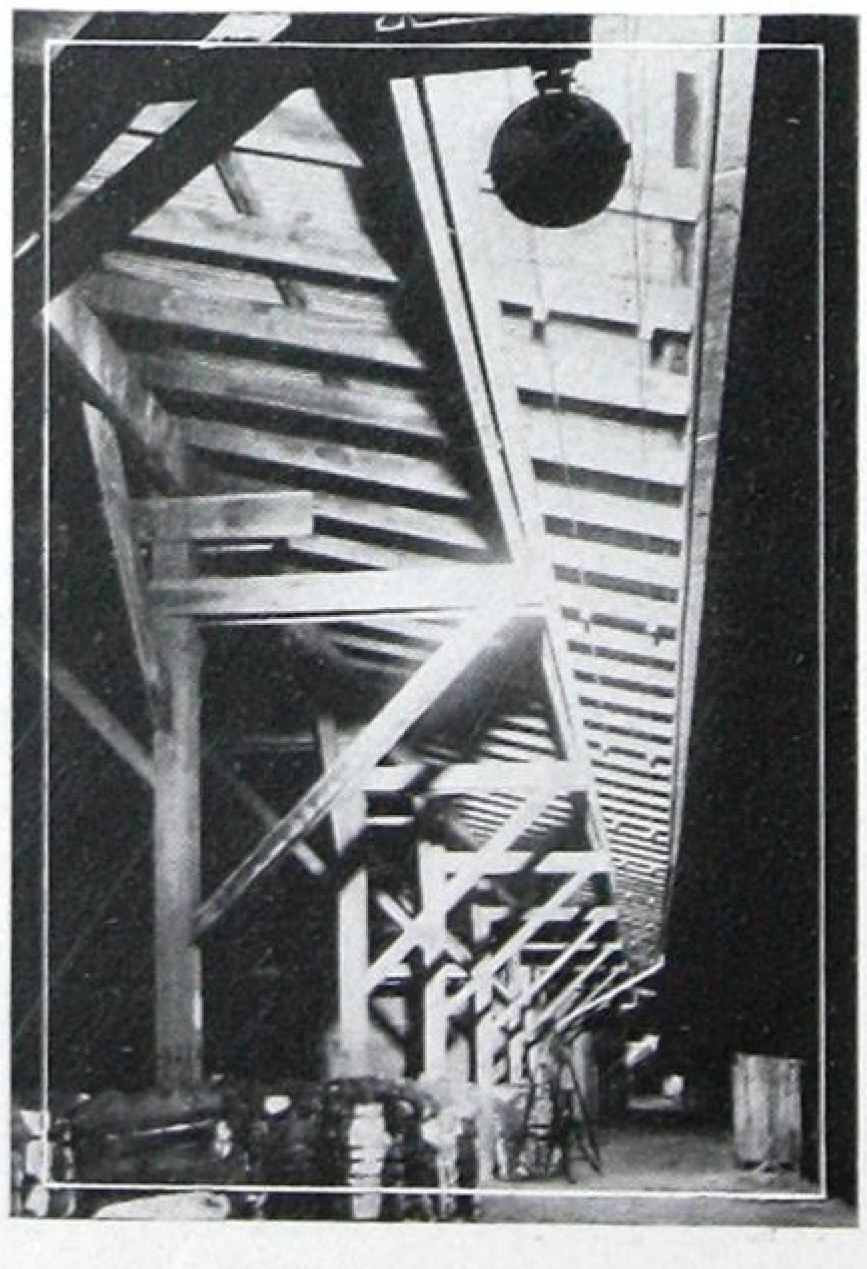
Union Stock Yards, Chicago, 43d Street Entrance to Armour & Co. Plant. X-Ray projectors light every nook and corner all through the night, making patrolling as easy and thorough as in the daytime.

24 Hours of Daylight

Modern business—crippled by the mass of men who have left its ranks for those of war—demands the utilization of every possible means of increasing output.

Flood lighting, as illustrated above, is being used in many big plants to facilitate transportation and production, and to keep the wheels of business running as smoothly at night as in the daytime.

There is no reason why work should cease when the sun goes down, as long as there is available such a reliable flood of artificial daylight. X-Ray Projectors have made it possible for many industries to put on night shifts which work as efficiently as the day employees. This doubles the output—gets two years' production out of one—and helps sustain the industrial life of the world during its most critical crisis.



Loading Platform

Railroad construction gangs use X-Ray Flood lighting, and their work continues uninterrupted for 24 hours a day. Manufacturers have placed X-Ray Projectors on hoisting cranes as auxiliary illumination to make the handling of heavy machine parts speedy and sure. Ship building and other vital out-door industries have worked night after night since the war began, with the aid of this ever-available daylight.

Night Construction

For night construction work, X-Ray Projectors will be found dependable and effective. Only one unit is used here and a large area is sufficiently illuminated to make night work practical and safe.

Think what this means in the building of ships and other vital construction which can continue 24 hours a day!

Many construction jobs have found X-Ray flood lighting invaluable as an aid to overtime work and speedy completion.

Regardless of what your night operations may be, if out of doors, you can increase the efficiency of your working force by giving them an abundance of light, directed on their work. With X-Ray Projectors, you can vary the spread of light to meet your needs.

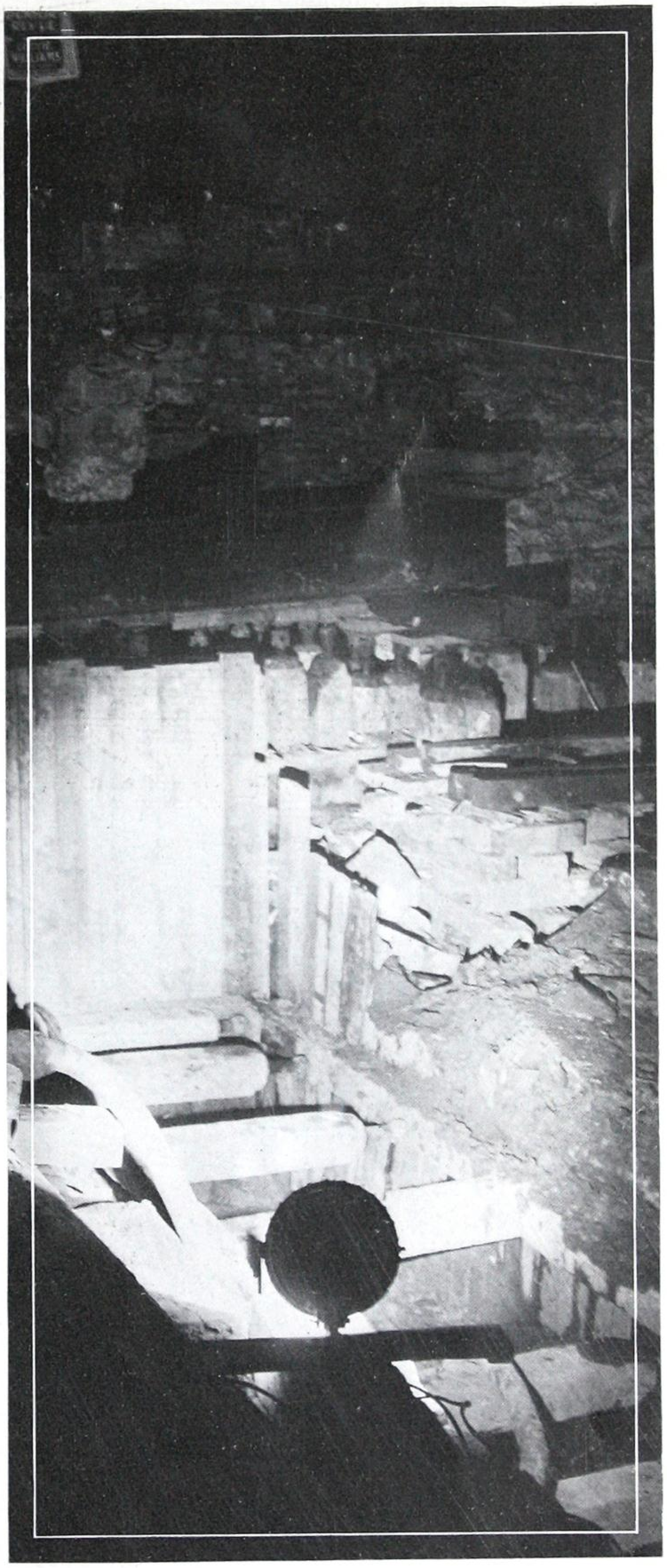
The wonderful reflecting qualities of X-Ray reflectors make X-Ray flood light projectors so powerful that fewer units are necessary.

After installation, X-Ray Projectors will be easily maintained on account of their sturdy, weatherproof construction.

X-Ray projectors are thoroughly ventilated, which prevents them from being affected by the elements, and they "stand up" as well in stormy as in fine weather. They are very easily cleaned, it being necessary only to open the hinged door and wipe out the reflector with a damp cloth.

The essential part of any flood lighting unit being its reflector, the fact that X-Ray Projectors are fitted with the famous X-Ray reflectors, insures a permanent and everlastingly brilliant reflecting surface.

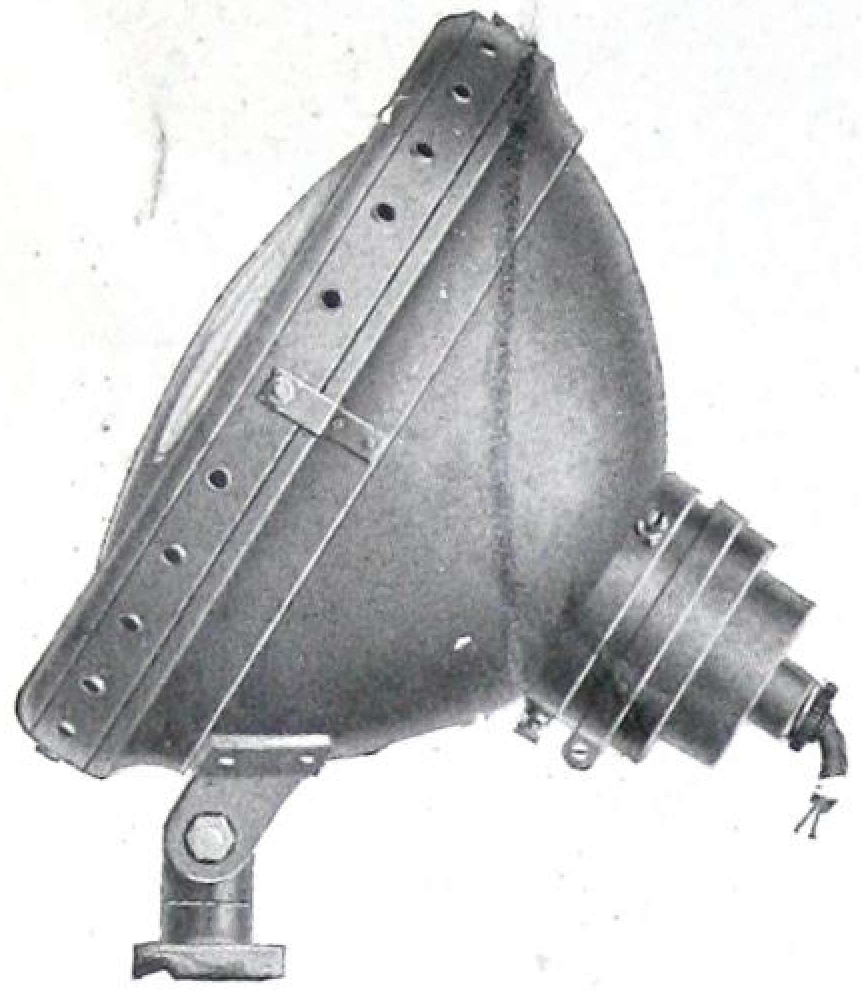
X-Ray Projectors are used by the United States Government in Army, Navy and Aviation work.



This shows the value of X-Ray projectors as used in the night construction work on the Rialto Theatre in Chicago. X-Ray projectors are weatherproof and allow the work to continue during inclement weather.

No. 51

For use with the 200 or 250-Watt G-30 Mazda "C" Flood Lighting Lamp



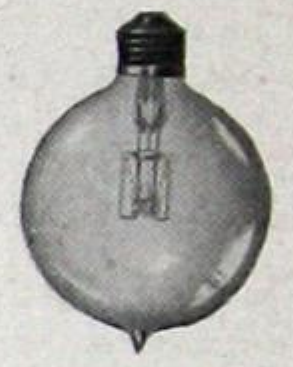
No. 51

General

The No. 51 X-Ray Projector, being small is particularly adapted for use on the sides of buildings, brackets and other places difficult of access.

It has been widely and successfully used for protection lighting and for facilitating night operations in large spaces, both inside and outside.

The unit is weatherproof—perfectly ventilated—and not affected by heat, cold, rain, snow or ice.



200 or 250 watt, 100-130 volt, G-30 bulb, medium screw base, Mazda "C" flood lighting lamp.

NOTE:—The lamp companies do not recommend this lamp for burning within an angle of 45 degrees base up. For such service equip the No. 51 Projector with No. 10265 sleeve (see page 10), and use standard PS bulb 200 watt Mazda "C" lamp.

Dimensions

Diameter 11½ inches.
Depth over all 9¾ inches.
Standard finish gray.
Standard package quantity 1.
Swivel and tilting base supplied with unit for bolting to supporting surface.
Size of base, 2 in. x 4 in. with two ½ in. holes 2⅝ in. on centers.
Weight, 10 lbs. When packed for shipment, 15 lbs.

No. 800 X-Ray Reflector.

No. 810 X-Ray Reflector.

Installation and Maintenance

The No. 51 Projector is regularly supplied with swivel and tilting base for bolting to supporting surface. It may be used with wall bracket No. 10270, Low Portable Base No. 10271, or Portable Stand No. 10275, at slight extra cost. Stud No. 10274, which is threaded for standard ¾-inch pipe, is also available for use where special pipe support is to be constructed. (See page 10.)

The lamp is easily focused from the outside, while the heat-resisting glass cover snaps open like an automobile headlight, facilitating lamp renewals and cleaning.

Reflector Equipment

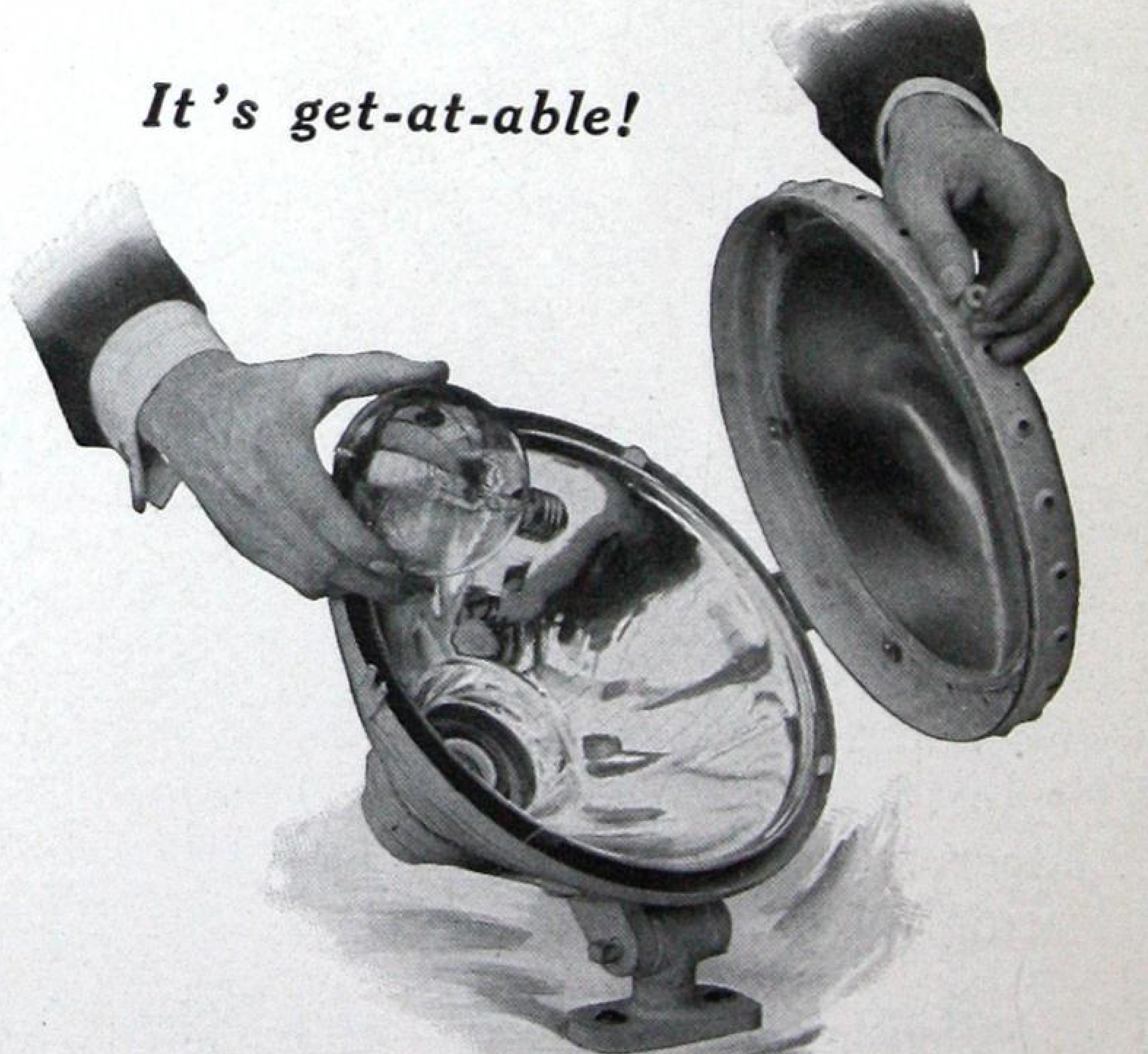
The No. 800 X-Ray Reflector, *which is regularly supplied and shipped with the No. 51 Projector*, produces a beam of light which may be varied from 12 to 20 degrees in spread. With lamp at focus a 12 degree beam as shown in curve 51-C is produced. Moving the lamp ¼-inch in front of focus produces a 20 degree beam as shown in curve 51-D. *(See page 9.)*

The No. 810 X-Ray Reflector, *supplied with the No. 51 Projector when specified*, produces a 40 degree beam with lamp at focus, as shown in curve 51-E. *(See page 9.)*

For a widely diffused beam, where it is desirable to cut down the direct glare, use the No. 51-E with frosted cover glass No. 10282 (slight extra charge).

X-Ray Projector Reflectors are all of X-Ray quality—made of the same special glass, pure silver plated by special process. The complete line of Reflectors for flood lighting service make X-Ray Projectors the most flexible, efficient and serviceable to be obtained.

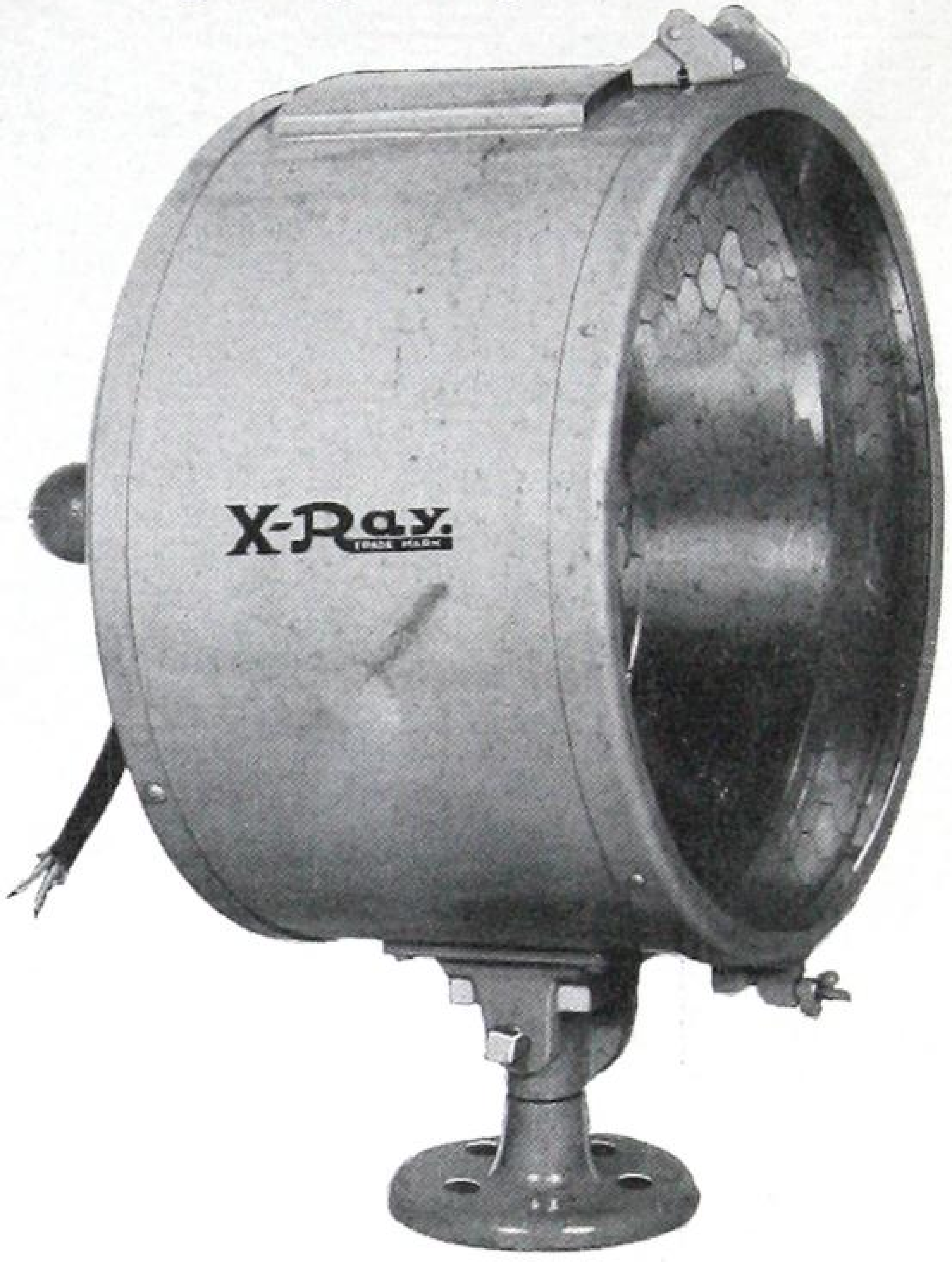
It's get-at-able!



X-Ray Projector No. 51 with cover open.

No. 60

For use with 400 or 500 Watt G-40 Mazda "C" Flood Lighting Lamp



General

The No. 60 X-Ray Projector is of medium size. It may be adapted to a wide variety of uses, as the three reflectors are designed to produce a maximum flexibility. The unit is properly ventilated and not affected by unusual conditions and changes in the weather.

Installation and Maintenance

The No. 60 Projector is regularly supplied as shown, with swivel and tilting base, for bolting to supporting surface. It may be used with wall bracket No. 10270, Low Portable Base 10271, or Portable Stand No. 10275 at slight extra cost. Stud No. 10274 which is threaded for standard ¾-inch pipe, is also available for use where special pipe support is to be constructed. (See page 10.) This unit is also supplied with heavy stand mounting, as No. 62, shown at bottom of page.

A hinged door makes lamp renewals and cleaning easy. The cover is of heat-resisting wire-glass.

The lamp may be readily focused from the outside.

Dimensions:

Diameter 14 in.; depth from front to back, 14 in.; height over all, 19½ in.; diameter of base, 5 in. Convenient size for average use.

Constructed throughout of heavy gauge galvanized steel, with a neutral gray enamel finish.

Standard package 1, weight, 23 lbs., when packed for shipment 35 lbs.

No. 835 X-Ray Reflector

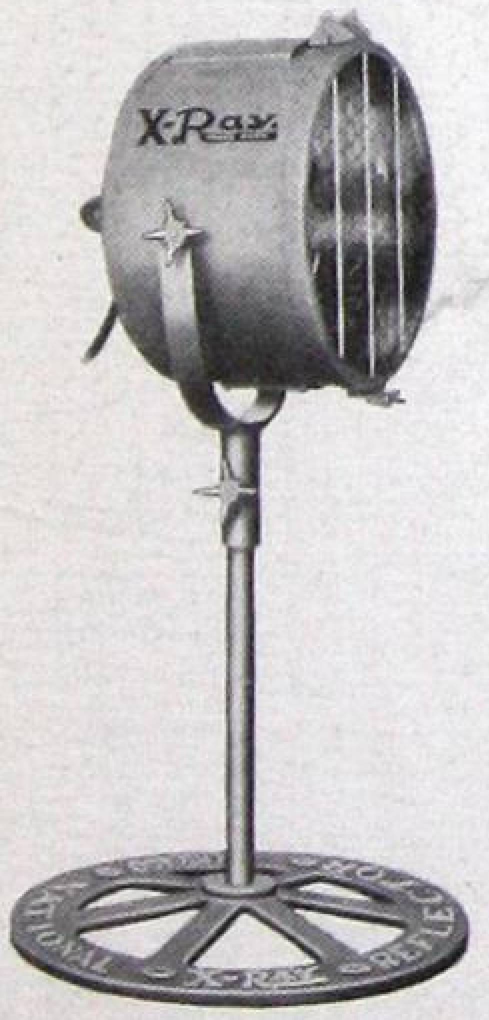
No. 840 X-Ray Reflector

No. 845 X-Ray Reflector

400 or 500 watt, 100-130 volt, G-40 bulb, Mogul screw base, Mazda "C" flood lighting lamp.

NOTE:—The lamp companies do not recommend this lamp for burning within an angle of 45 degrees base up.

Reflector Equipment



No. 62
X-Ray Projector

The No. 835 X-Ray Reflector, *which is regularly supplied and shipped with the No. 60 Projector*, produces a beam of 25 degree divergence with lamp at focus, as shown in curve 60-D, page 9.

The No. 840 X-Ray Reflector, *supplied with the No. 60 projector when specified*, produces a 10 degree beam, with lamp at focus, as shown in curve 60-C, page 9.

The No. 845 X-Ray Reflector, *supplied when specified*, produces a wide beam of 50 degrees, as shown in curve 60-E, page 9.

For a widely diffused beam the No. 845 Reflector with special type of diffusing front glass cover No. 10279 is available at slight extra cost.

Where it becomes desirable to cut down the direct glare, a sand-blasted cover glass No. 10278 may be supplied, over any of the three above reflectors, at slight extra cost.

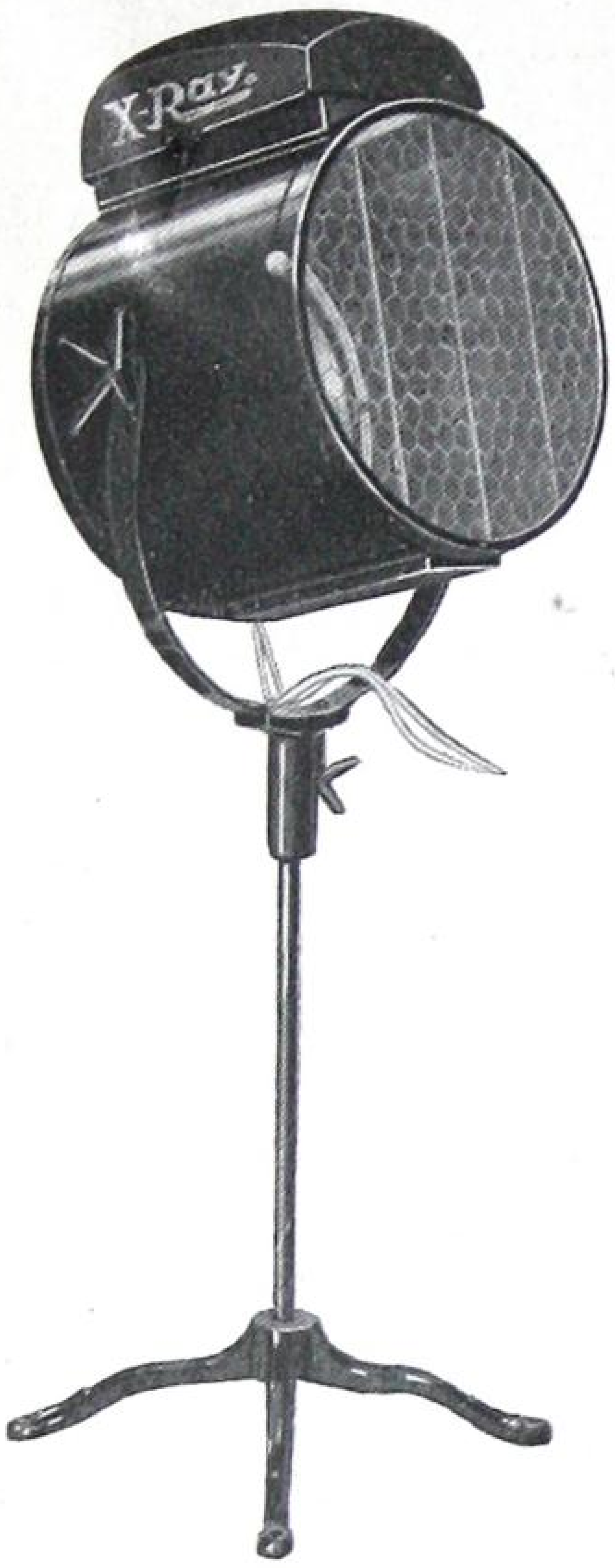
For effecting a widely spread beam of light in two opposite directions, while confining the spread in the remaining two opposite directions, a special ribbed prism glass cover No. 10280 may be used, at slight extra cost. This cover can be turned in the door to direct the band of light vertically, horizontally or at any angle. Either the No. 835 or No. 845 reflectors must be used to produce this result.

Where it is desired to eliminate the spill-light direct from the lamp filament, on one side or the other, spill-shield No. 10269 may be fitted inside the cover of the No. 60 or 62 projector for a small extra charge. With this shield in use the main beam is unimpaired in efficiency.

Nos. 90, 91 and 92

"The Mogul"

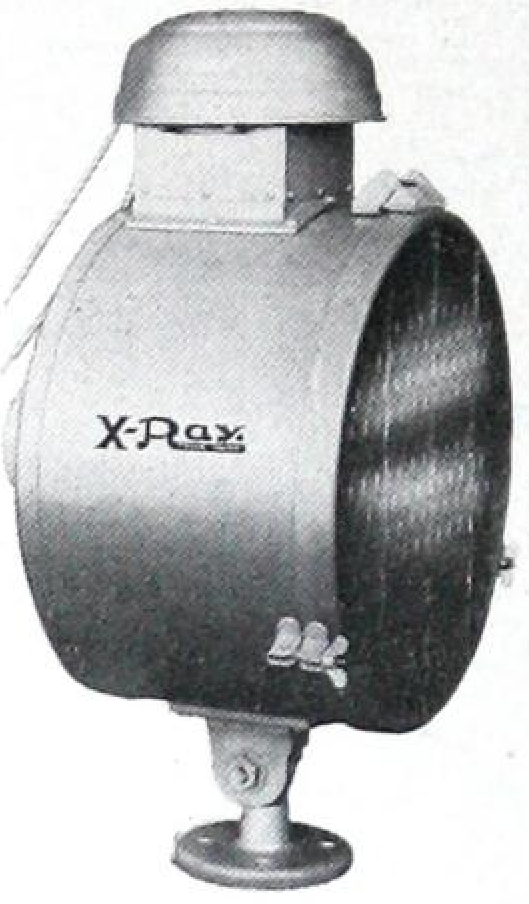
For Use with any Standard Lamp Having Mogul Base
300, 400, 500, 750, 1000 and 1500-Watt Mazda "C" PS Bulb



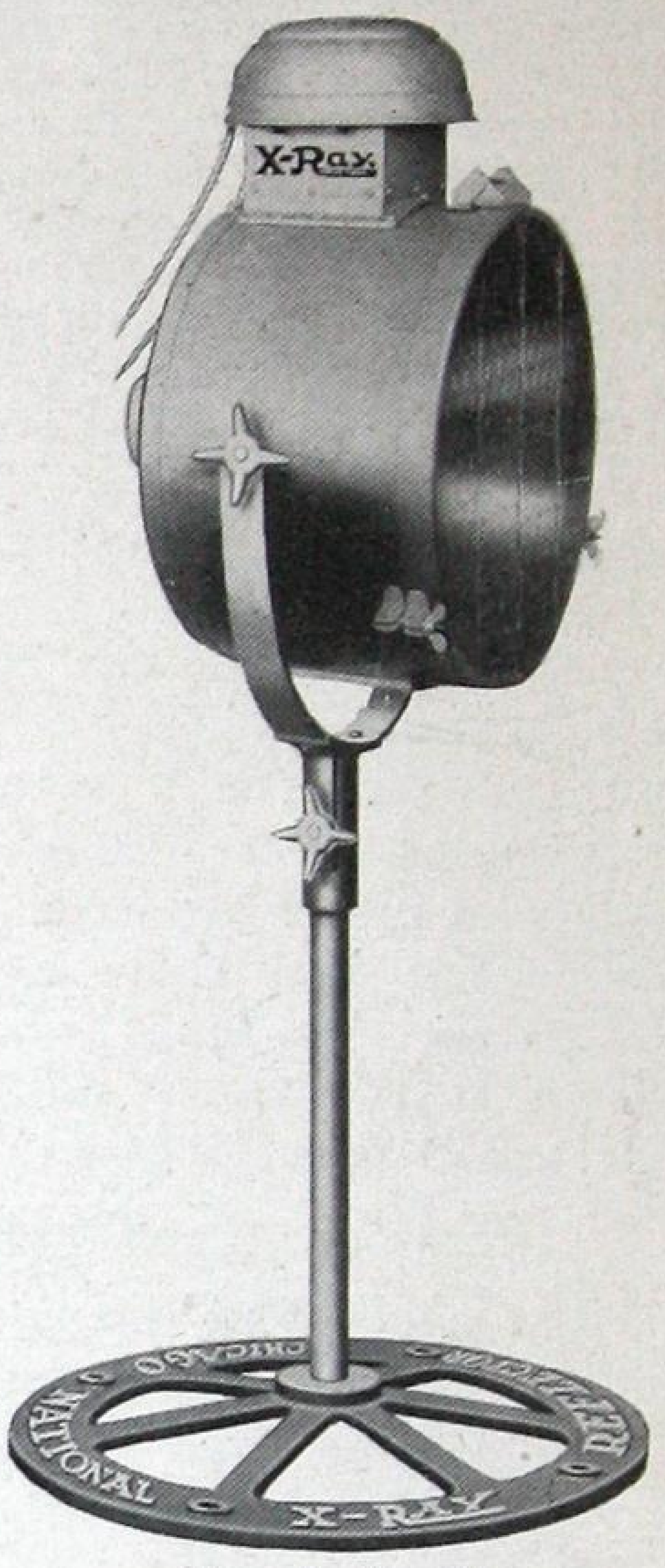
Mogul No. 90

Dimensions No. 90

Diameter of barrel, 14 inches.
Depth over all, 16½ inches.
Diameter over all, 17 inches.
Spread of base, 19½ inches.
Height, not inc. yoke and stand, 18⅝ in.
Standard finish, black.
Standard package quantity, 1.
Weight, 35 lbs.; packed, 66 lbs.



Mogul No. 91



Mogul No. 92

Dimensions Nos. 91-92

Diameter of barrel, 14 inches.
Depth over all, 13 inches.
Spread of base, No. 91, 5 inches,
No. 92. 18 inches.
Height, No. 91, over all, 24 inches.
Height, No. 92, not including yoke and stand, 18¼ inches.
Standard finish, gray.
Standard package quantity, 1.
Weight, No. 91, 28 lbs.; packed, 43 lbs.
No. 92, 40 lbs.; packed, 59 lbs.

General

X-Ray "Mogul" Projectors are substantially made of galvanized steel and castings, and are weatherproof, well-ventilated, and light in weight.

The No. 90 deep-barrel type has been installed successfully on many jobs.

The No. 92, with shallow barrel, is a powerful unit adaptable for varied uses.

Installation and Maintenance

Moguls Nos. 90 and 92 are regularly supplied with yoke and stand support, arranged for bolting to supporting surface. The yoke will slip on standard ¾-inch pipe, where special pipe support is to be constructed.

Mogul No. 91 is regularly supplied with swivel and tilting base for bolting to supporting surface. It may be used with wall bracket No. 10270, Low Portable Base No. 10271 or Portable Stand No. 10275, at slight extra cost. Stud No. 10274 which is threaded for standard ¾-inch pipe, is also available for use when special pipe support is to be constructed. (See page 10.)

Lamp renewals and cleaning are made easy with Mogul projectors on account of hinged door allowing free access to the interior. The top hood opens for making lamp adjustment. Socket mechanism allows lamp to be perfectly centered in all three planes.

Reflector Equipment

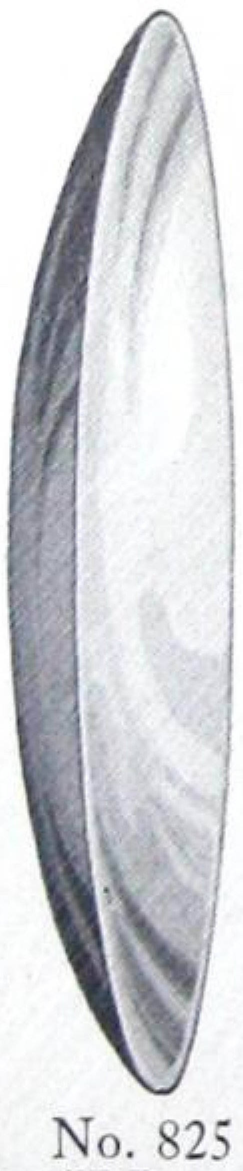
The No. 825 X-Ray Reflector, which is *regularly supplied and shipped* with the Mogul No. 90, 91 and 92 Projectors, produces a beam of 10 degrees divergence with lamp at focus, as shown in curve 90-C, page 9.

The No. 827 X-Ray Reflector, supplied with Mogul projectors *when specified*, produces a 15 degree beam with lamp at focus, as shown in curve 90-D, page 9.

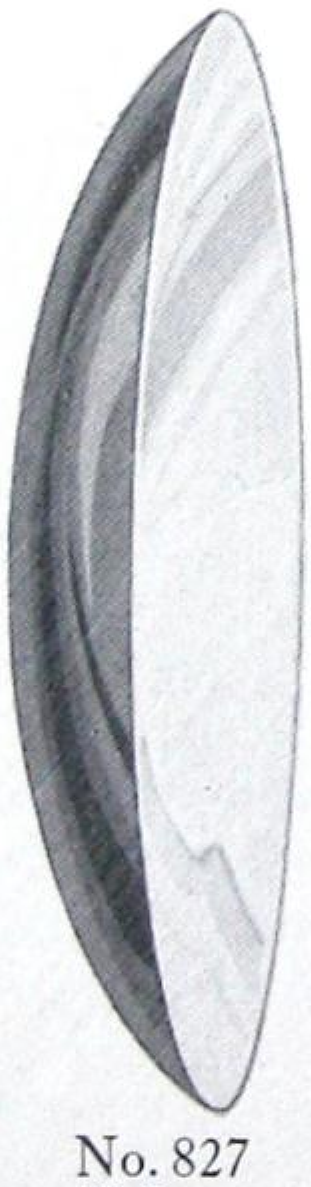
For an extended beam, as shown in curve 90-E, the No. 825 or No. 827 Reflector with cover No. 10279 must be used. A small extra charge is made for this cover.

Where it is desirable to cut down the direct glare, a sand-blasted cover glass No. 10278 may be supplied, at a small extra cost, for either of the above reflectors.

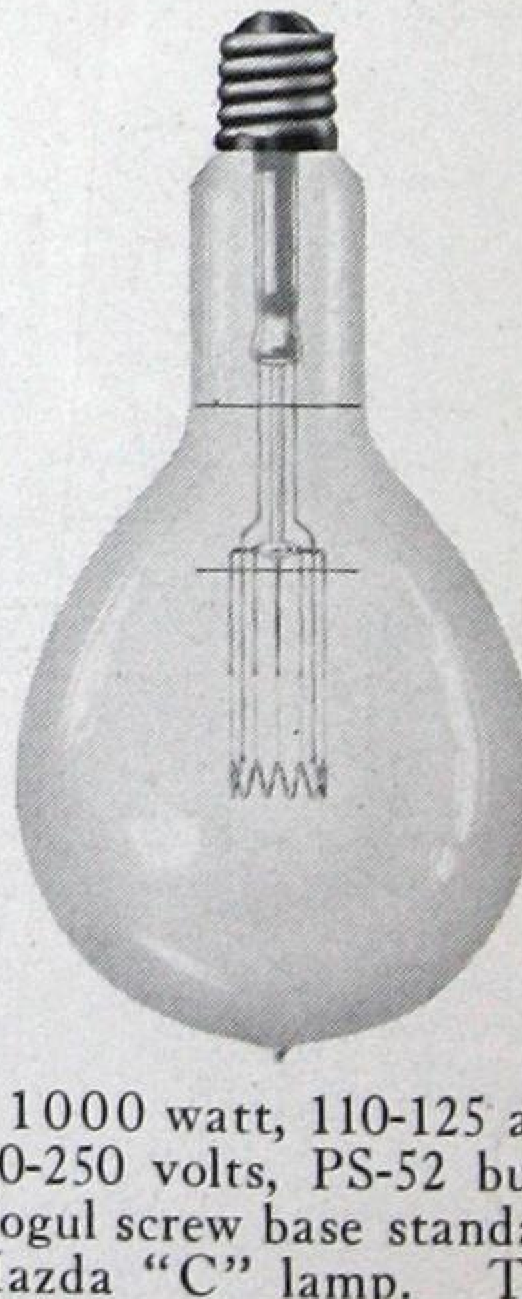
For effecting a widely spread beam of light in two opposite directions, while confining the spread in the remaining two opposite directions, a special ribbed prism glass cover No. 10280 may be used at a slight extra cost. This cover can be turned in the door to direct the band of light vertically, horizontally or at any angle. Either of the above reflectors may be used.



No. 825
X-Ray
Reflector



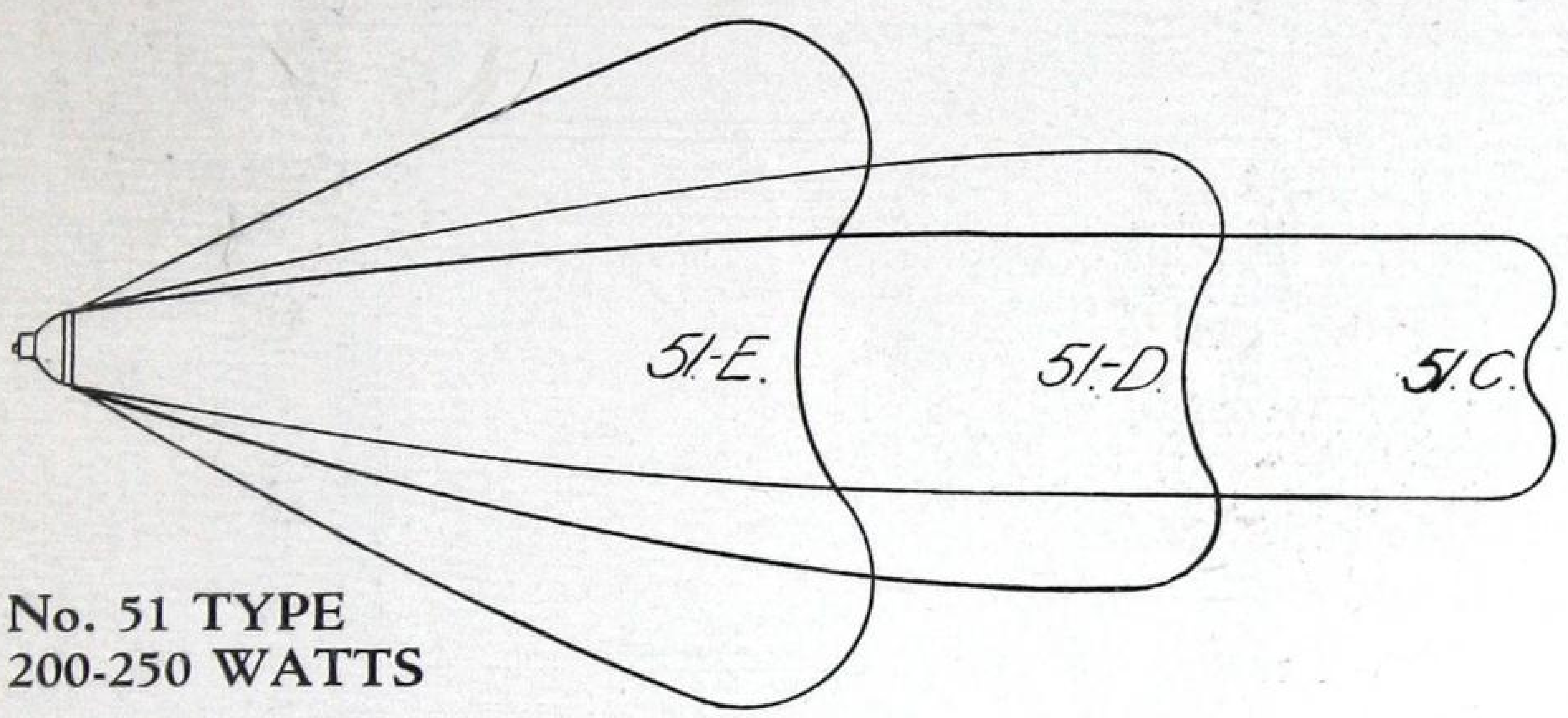
No. 827
X-Ray
Reflector



1000 watt, 110-125 and 220-250 volts, PS-52 bulb, Mogul screw base standard Mazda "C" lamp. This size generally used in Mogul Projectors.

How to Specify X-Ray Projectors

X-Ray Projectors, for flood lighting, have been designed in three general classes:
Extensive Reflectors (designated by the letter E) give a wide, smooth distribution of light for close-up work.
Distributing Reflectors (designated by the letter D) give a more concentrated beam for work at average distances from the unit.
Concentrating Reflectors (designated by the letter C) give a narrow, intense beam of light for long distance use.
Reflectors have been designed for each size unit so as to be readily interchangeable.
From the following approximate charts, the unit best adapted for work under consideration may be easily determined. The area covered is calculated with projector placed one hundred feet distant and beam at right angle to area.
Unless otherwise specified, Nos. 51-D, 60-D and 90-C are shipped.



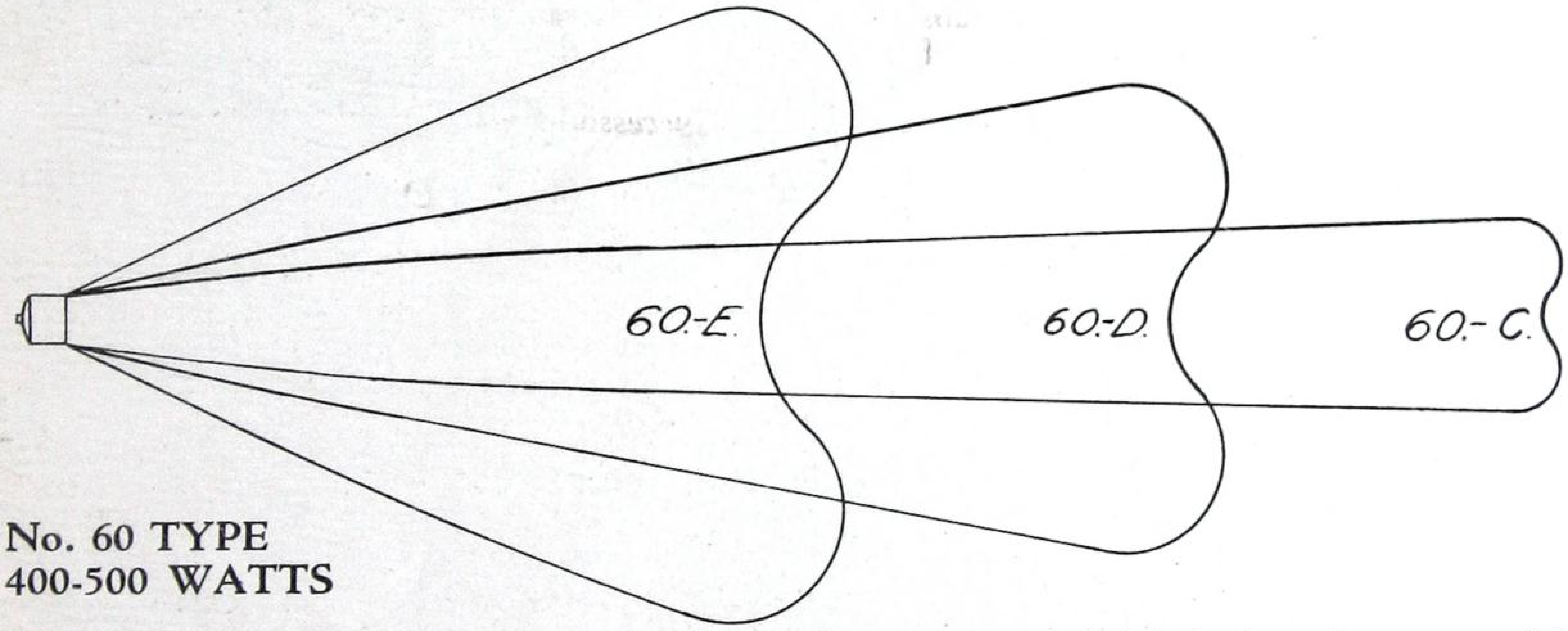
No. 51 TYPE
200-250 WATTS

Permanence

X-Ray Reflectors of standard quality have enabled X-Ray Engineers to produce a line of flood lighting units, which for efficiency, range and flexibility are unsurpassed.

The usefulness of any projector unit is measured by the efficiency and durability of the Reflector employed. X-Ray Reflectors are acknowledged the most powerful in many classes of lighting.

No. 51-E unit; No. 810 Reflector; spread of beam, 40°; area covered, 72′ circle; intensity on area 0.63 foot candles.
No. 51-D unit; No. 800 Reflector, lamp ¼″ in front of focus; spread of beam, 20°; area covered, 35′ circle; intensity on area, 1.8 foot candles.
No. 51-C unit; No. 800 Reflector, lamp at focus; spread of beam, 12°; area covered, 21′ circle; intensity on area, 5.2 foot candles.

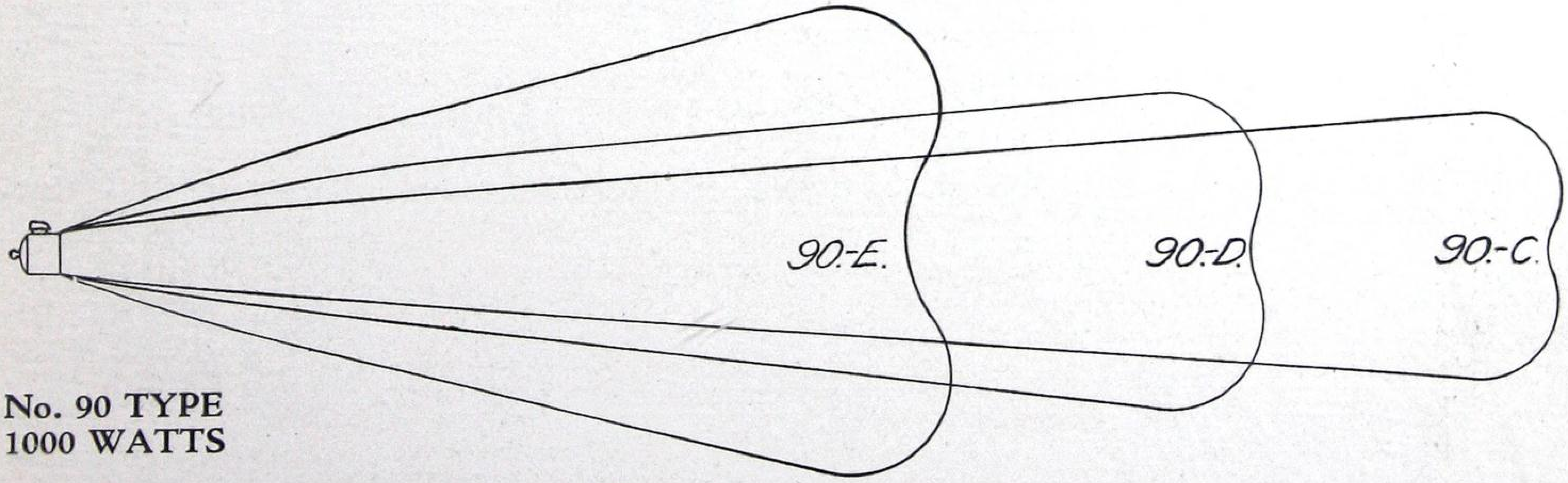


No. 60 TYPE
400-500 WATTS

Maintenance

X-Ray Reflectors stand up under service. The special silver plated mirror backing does not tarnish, blister, peel or crack. A mere wipe with damp cloth restores the original brilliancy.

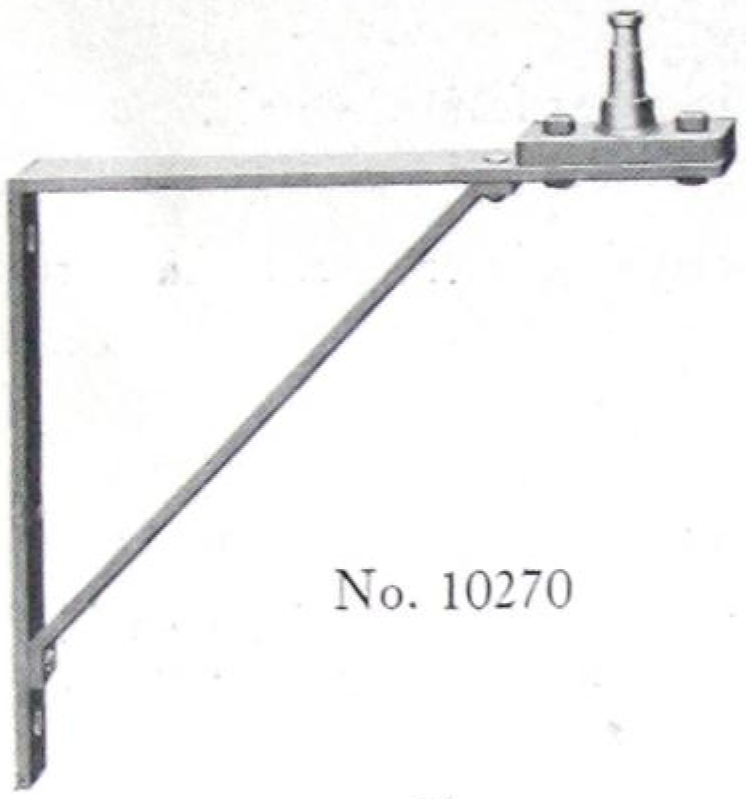
No. 60-E unit; No. 845 Reflector; spread of beam, 50°; area covered, 94′ circle; intensity on area, 0.4 foot candles.
No. 60-D unit; No. 835 Reflector; spread of beam, 25°; area covered, 45′ circle; intensity on area, 1.3 foot candles.
No. 60-C unit; No. 840 Reflector; spread of beam, 10°; area covered, 17′ circle; intensity on area, 13.4 foot candles.



No. 90 TYPE
1000 WATTS

No. 90-E unit; No. 825 or 827 Reflector, special cover No. 10279; spread of beam, 35°; area covered, 62′ circle; intensity on area, 1.1 foot candles.
No. 90-D unit; No. 827 Reflector; spread of beam, 15°; area covered, 26′ circle; intensity on area, 7.8 foot candles.
No. 90-C unit; No. 825 Reflector; spread of beam, 10°; area covered, 17′ circle; intensity on area, 18.4 foot candles.

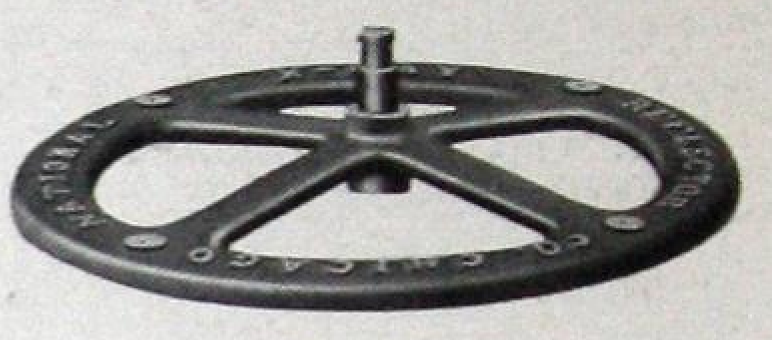
Fittings



No. 10270

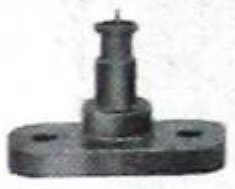
Wall Bracket No. 10270. For mounting No. 51, No. 60 and No. 91 projectors on side of building or posts. Projects 14″.

Low Portable Base No. 10271. For mounting No. 51, No. 60 and No. 91 projectors where it is desirable that unit be close to foundation. Diameter 14″, weight 8 lbs.



No. 10271

No. 10272



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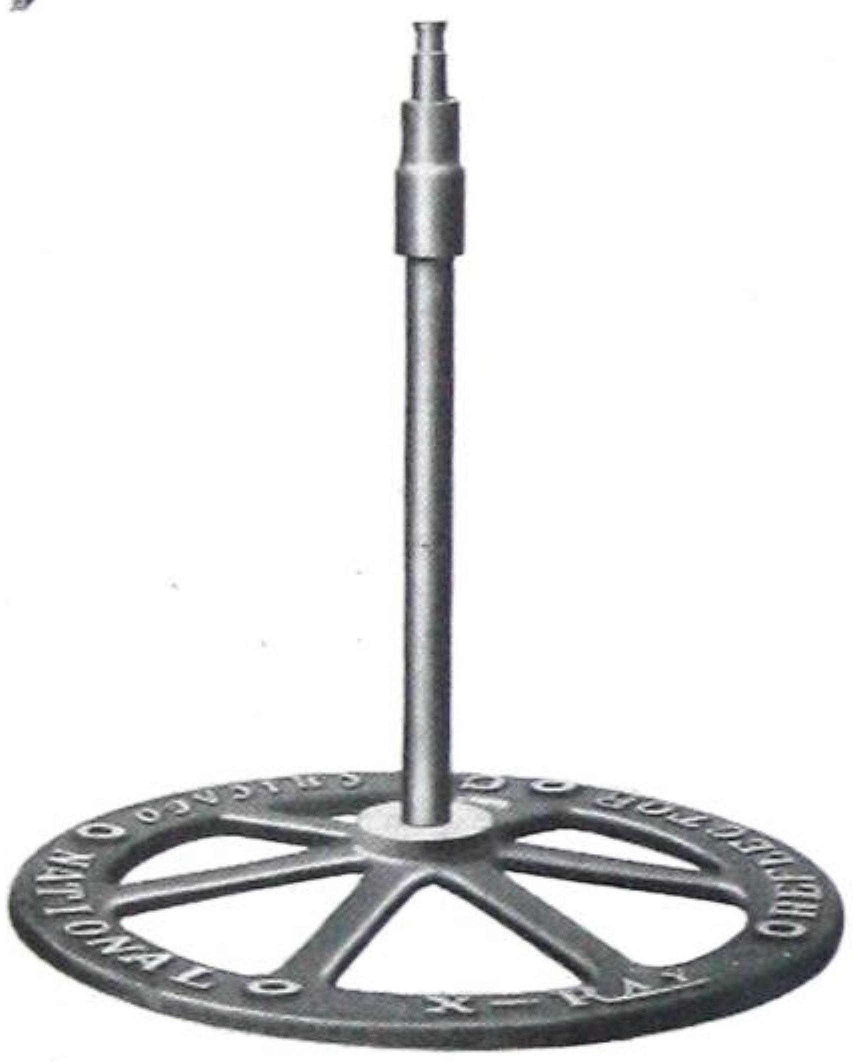
No. 10274



No. 10275

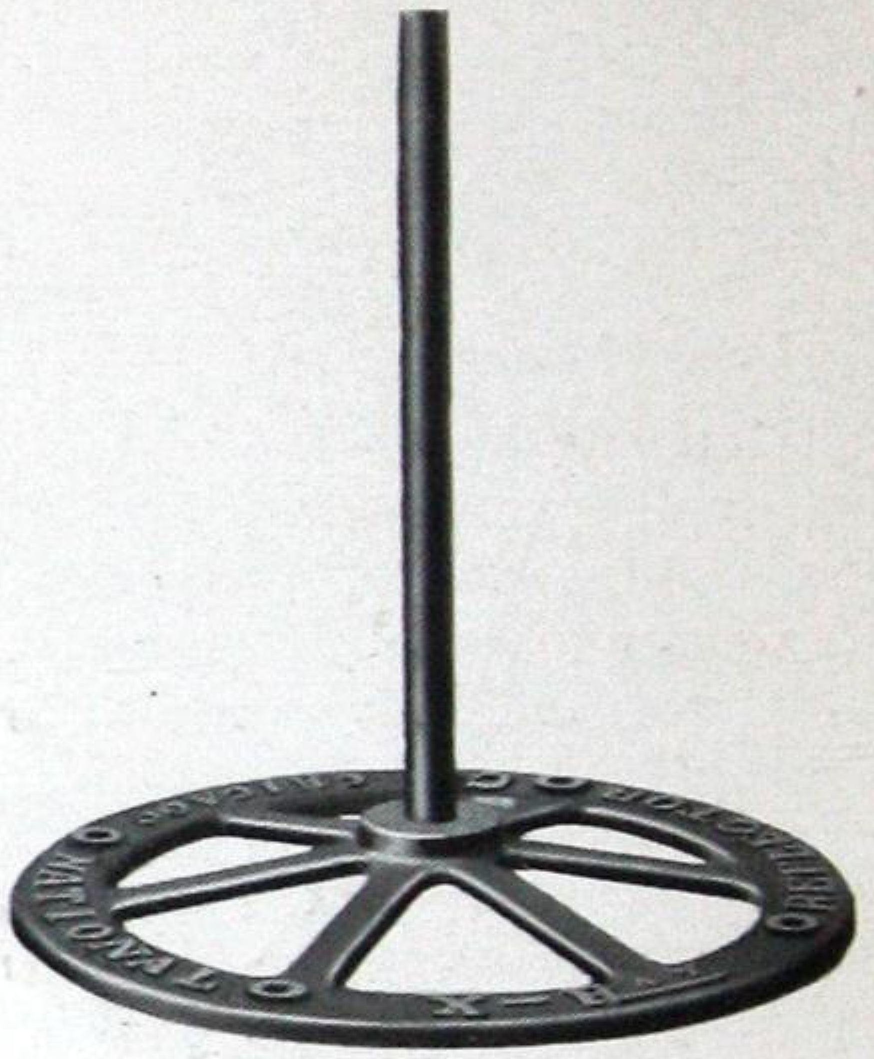
Round "T" Base No. 10272. Standard for No. 60, and No. 91 projectors.

Straight "T" Base No. 10273. Standard for No. 51 projector.

Stud Fitting No. 10274. To mount No. 51, No. 60 and No. 91 projectors. Threaded for standard ¾-inch pipe.

Portable Stand No. 10275. For No. 51, No. 60 and No. 91 projectors. Diameter 18″, height 20″, weight, 18 lbs.

Portable Stand No. 10276. Standard for No. 62 and No. 92 projectors. Diameter 18″, height 20″, weight, 18 lbs.



No. 10276

14-inch Clear Cover Glass No. 10277. Standard for Nos. 60, 62, 90, 91 and 92 projectors.

Sand-blasted Cover Glass No. 10278. Special for same projectors.

Diffusing Cover Glass No. 10279. Special for same projectors.

Ribbed Prism Cover Glass No. 10280. Special for same projectors.

These special covers are supplied for a slight additional charge.

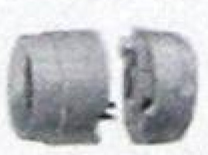
10-inch Clear Cover Glass No. 10281. Standard for No. 51 projector.

Frosted Cover Glass No. 10282. Special for No. 51 projector.

Enameled Cover Glass. The clear cover glass is sometimes specially supplied, enameled in red or green for government aeroplane work. Frosted or enameled covers are supplied for a slight additional charge.

Clear Cover Glass is always shipped with every projector unless otherwise specified.

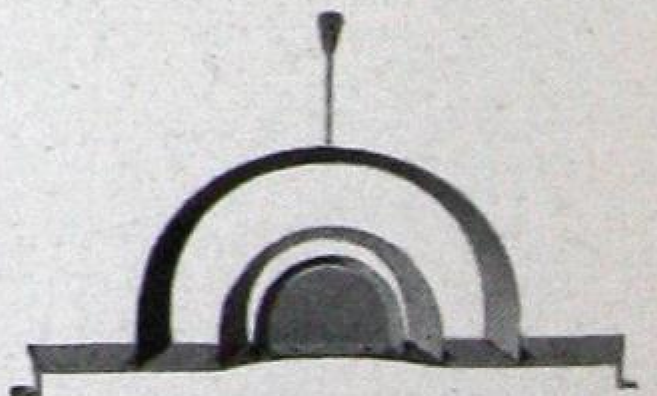
No. 10265. Sleeve extension with clamping band, for adapting No. 51 projector to standard PS-30 bulb, 200 watt "C" lamp.



No. 10283. Separable porcelain socket for No. 51 projector.

No. 10284. Clamping band for socket housing, No. 51 projector.

No. 10285. Complete socket and socket housing for No. 51 projector.



No. 10269. Spill-ring for eliminating spill light. For No. 60 and No. 62 projectors.

What X-Ray Industrial Lighting Is

No need to remove lamps and run up a high breakage cost due to handling them. No need to waste valuable time taking down reflectors for washing. No porous surface (like paint or metal) for dirt to work into.

Simply wiping out any dust accumulation with a moist cloth leaves the X-Ray Reflector sparkling and bright—as efficient as the day it was installed. Another wipe removes the dirt from the lamp.

A scientific principle, which makes possible light control—protects the eye and conserves the health of employees by properly shielding the brilliant lamps, while at the same time furnishing a clear, well diffused light, ample for all purposes.

A carefully worked out plan, by men who have studied the influence of electric lighting on industry of today, to increase efficiency—to speed up production—to reduce spoilage—to create better working conditions—to lessen accidents—and to save you money in the operation of your factory.

A powerful reflector—known as the "X-Ray" reflector—of the "bowl" or "beehive" shape, which conceals the glaring lamp. The X-Ray reflector is made in a variety of shapes and sizes to suit all general and special lighting conditions. It is the most powerful reflector made. It is made of the finest quality of glass, tough and clear. It is made in one piece—corrugated to properly break up the light rays and give uniform diffusion. Its high efficiency is permanent, as its silver reflecting surface is protected by glass on the inside and a special backing on the outside. The reflecting surface is therefore never exposed to the deteriorating influence of dirt and dust accumulation, or of handling.

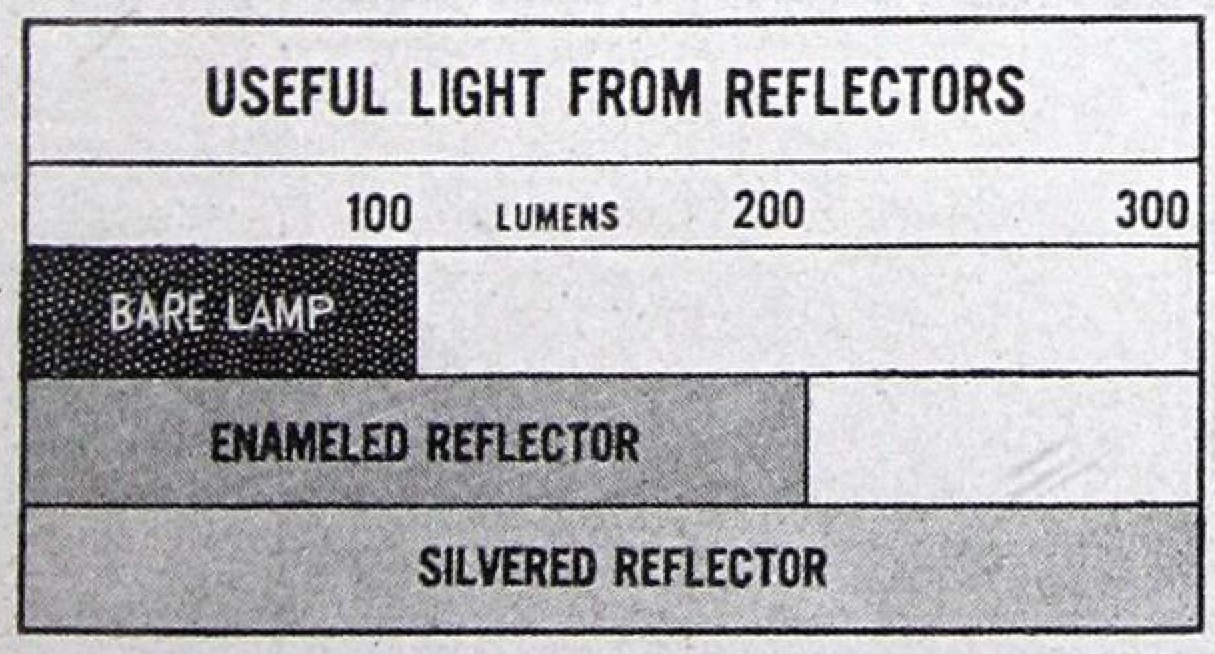


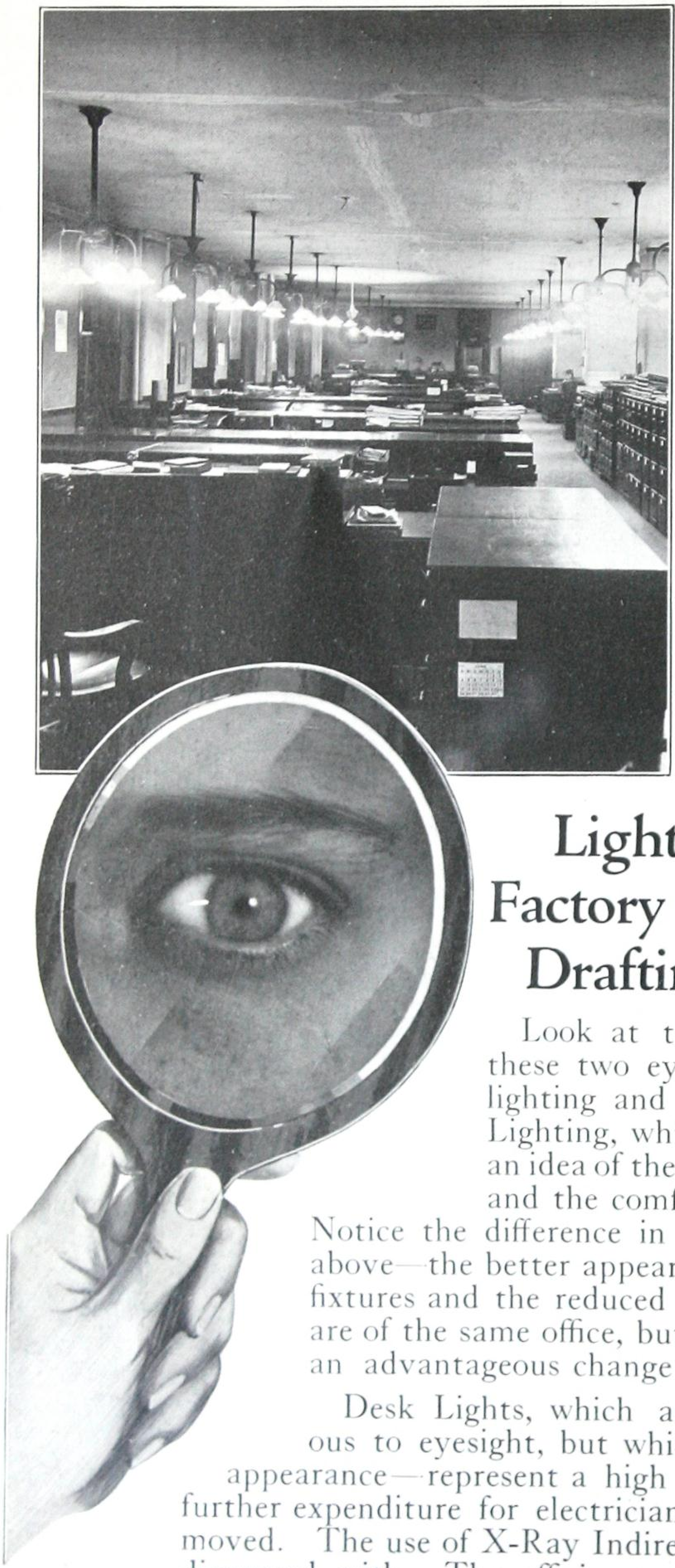
FIGURE II: *By this diagram of the reflected lumens (the unit of quantity of light), the relative reflective ability of two different reflectors is shown*

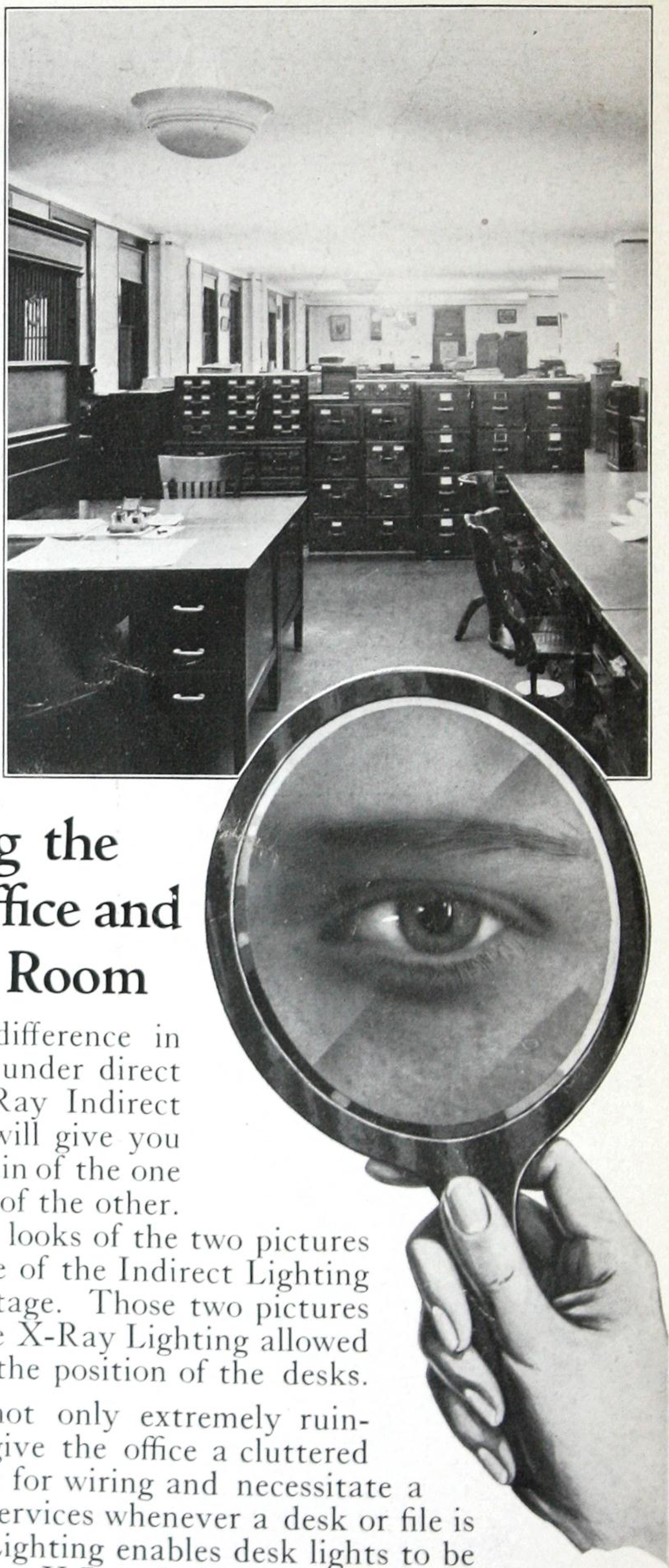
A lighting service providing a flood of clear white light from concealed sources. It enables the manufacturer to conserve and control his supply of electricity and use it to the highest point of efficiency in his plant, like any other raw material, for the greatest good to himself and the men who produce his product. X-Ray Reflectors, because of their great power, are generally placed at the ceiling, out of reach of men and moving material. Time will not be wasted adjusting lights. The shop will be filled from floor to ceiling and from wall to wall with a cheerful, ample flood of artificial daylight, furnishing the ideal condition for greatest human efficiency in production.

We quote verbatim from the article accompanying this chart published in the December, 1915, issue of *Factory*:

"*Tests show that a deep bowl enamel steel reflector, of the type commonly seen in factories having the general system of direct-lighting, doubles the amount of useful light from a 60 watt Mazda incandescent, at a suspension of 8 feet above the working plane.*

"*Another type of reflector, almost identical in design, but having a silvered reflecting surface, gave approximately three times the quantity of useful light as the bare bulb, over 50% more than the reflector with the enamel reflecting surface.*"





Lighting the Factory Office and Drafting Room

Look at the difference in these two eyes—under direct lighting and X-Ray Indirect Lighting, which will give you an idea of the strain of the one and the comfort of the other. Notice the difference in the looks of the two pictures above—the better appearance of the Indirect Lighting fixtures and the reduced wattage. Those two pictures are of the same office, but the X-Ray Lighting allowed an advantageous change in the position of the desks.

Desk Lights, which are not only extremely ruinous to eyesight, but which give the office a cluttered appearance—represent a high cost for wiring and necessitate a further expenditure for electrician's services whenever a desk or file is moved. The use of X-Ray Indirect Lighting enables desk lights to be dispensed with. The efficiency of the X-Ray Reflector also makes indirect lighting adaptable for use in drafting rooms where good lighting is so essential.

Send for a copy of our book on office lighting. It will give you much valuable information on the lighting of your office.

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National X-Ray Reflector Co.

235 W. Jackson Blvd.
CHICAGO

31 W. 46th Street
NEW YORK